

AMENDMENTS TO THE CLAIMS

Claims 1-8 (Cancelled)

9. (New) A heat exchanger, comprising:
- a) a shell having a first fluid inlet and a first fluid outlet, and having first and second ends;
 - b) a plurality of tubes located in the shell and extending horizontally between the first and second shell ends;
 - c) a tube sheet located at each of the first and second shell ends, the tube sheet allowing the tubes to pass therethrough;
 - d) each of the first and second shell ends having a bonnet located thereon, with at least one of the bonnets having a second fluid inlet and a second fluid outlet;
 - e) a wall located in the bonnet with the second fluid inlet, the wall forming a chamber, which chamber allows communication between the second fluid inlet and at least some of the tubes that provide an exit from the chamber, the wall being separated from the adjacent tube sheet by a distance so as to form a cross-sectional area of the chamber that is substantially equal to the cross-sectional area of the tubes exiting the chamber.
10. (New) The heat exchanger of claim 9, wherein the bonnets are domes.

11. (New) The heat exchanger of claim 9, wherein the wall comprises a horizontal portion and a vertical portion, with the vertical portion being separated from the adjacent tube sheet by a distance so as to form the cross-sectional area of the chamber.
12. (New) A heat exchanger, comprising:
 - a) a shell having a first fluid inlet and a first fluid outlet, and having first and second ends;
 - b) a plurality of tubes located in the shell and extending horizontally between the first and second shell ends;
 - c) a tube sheet located at each of the first and second shell ends, the tube sheet allowing the tubes to pass therethrough;
 - d) each of the first and second shell ends having a bonnet located thereon, with at least one of the bonnets having a second fluid inlet and a second fluid outlet;
 - e) at least one wall located in at least one of the bonnets, the wall forming a chamber between the tube sheet and the wall, the chamber having some of the tubes leading into the chamber and other of the tubes exiting from the chamber;
 - f) the wall being spaced from the tube sheet by a distance so as to form a cross-sectional area that is substantially equal to the cross-sectional area of the tubes leading into the chamber.
13. (New) The heat exchanger of claim 12, wherein the bonnets are domes.

14. (New) The heat exchanger of claim 12, wherein the wall comprises a horizontal portion and a vertical portion, with the vertical portion being separated from the adjacent tube sheet by a distance so as to form the cross-sectional area of the chamber.
15. (New) A heat exchanger, comprising:
- a) a shell having a first fluid inlet and a first fluid outlet, and having first and second ends;
 - b) a plurality of tubes located in the shell and extending horizontally between the first and second shell ends;
 - c) a tube sheet located at each of the first and second shell ends, the tube sheet allowing the tubes to pass therethrough;
 - d) each of the first and second shell ends having a bonnet located thereon, with at least one of the bonnets having a second fluid inlet and a second fluid outlet;
 - e) at least one baffle located in each of the bonnets, the baffle extending from the tube sheet and forming chambers in the respective bonnet;
 - f) some of the chambers forming turnarounds and having some of the tubes leading thereinto and other of the tubes exiting therefrom;
 - g) the turnaround chambers having a wall that is spaced from the respective tube sheet so as to form a cross-sectional area that

is substantially equal to the cross-sectional area of the tubes leading into the subchamber.

16. (New) The heat exchanger of claim 15, wherein the bonnets are domes.
17. (New) The heat exchanger of claim 15, wherein the turnaround chambers change size and cross-sectional area successively in the flow direction of the second fluid.
18. (New) The heat exchanger of claim 15, wherein the turnaround chambers are progressively larger in the flow direction of the second fluid.
19. (New) The heat exchanger of claim 15, wherein the heat exchanger is of the DX type.
20. (New) The heat exchanger of claim 15, wherein baffles form chords in the domed bonnets.